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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,605	02/26/2002	Keith M Skubitz	284.00010101	3442

26191 7590 03/09/2007

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PO BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
EMCH, GREGORY S	
ART UNIT	PAPER NUMBER
1649	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/069,605	SKUBITZ ET AL.	
	Examiner	Art Unit	
	Gregory S. Emch	1649	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *24 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) *11-26 and 32-45* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 27-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-45* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/10/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☒ Other: *Sequence alignments A and B*.

DETAILED ACTION

The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Examiner Gregory S. Emch, Art Unit 1649.

Election/Restrictions

Applicants' elections with traverse of Group IV and SEQ ID NO: 14 in the reply filed 24 July 2006 is acknowledged. Because Applicants did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 11-26 and 32-45 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected subject matter, there being no allowable generic or linking claim.

Claims 1-10 and 27-31 to the extent of SEQ ID NO: 14 are under examination in the instant office action.

Information Disclosure Statement

A signed and initialed copy of the IDS paper filed 10 December 2004 is enclosed in this action.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-10 and 27-31 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-34 and 38-40 of copending application no. 10/469,273. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the '273 application are directed to isolated peptides comprising SEQ ID NO: 14, which have the same functions as the peptides of the instant claims. Also, claims 3-8 of the copending application recite that the peptides are complexed with the same carrier molecules or structures recited by the instant claims 5-10.

In addition, claims 9-40 of the '273 application recite the same method steps as claims 27-31 of the instant application, i.e. contacting immune cells with peptides of SEQ ID NO: 14. It is noted that the preambles of the method claims of both applications recite the intended purposes of the inventions and thus impart no patentable weight on the claims (see MPEP 2111.02, section II). Regardless, the preambles of the claimed methods of both applications are obvious variants. For example, claims 9-15 of the '273 application recite *in vivo* and *in vitro* methods of activating or inhibiting (modulating the activation of) a neutrophil (an immune cell) with the peptides. Similarly, claims 16-22 of the '273 application recite *in vivo* and *in vitro* methods of modulating the homotypic and/or heterotypic adhesion of CD66 family members (which are expressed by immune

cells). Further, claims 23-28 of the '273 application recite *in vivo* and *in vitro* methods that encompass the same limitations as the instant methods. Also, claims 29-32 of the '273 application recite therapeutic methods that are obvious variants of the instantly claimed methods. Similarly, claims 33 and 34 of the '273 application recite methods of altering bacterial, viral or cellular binding to cells or a biomaterial with the peptides, (altering immune cell function and/or activation). Finally claims 38-40 of the '273 application recite methods of altering the immune response, methods of altering angiogenesis and methods of altering keratinocyte proliferation, respectively.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 112, first paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-10 and 27-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

The claims are drawn to an isolated peptide comprising an amino acid

sequence represented by SEQ ID NO: 14, or analog thereof that modulates the function of at least one CD66 family member and/or at least one ligand thereof; and a method of modulating immune cell activation, proliferation, and/or differentiation, comprising contacting an immune cell with at least one peptide or peptide conjugate comprising an amino acid sequence represented by SEQ ID NO: 14.

The instant claims are genus claims because the specification (and claims) do not set forth the structure of the multitude of amino acid species, i.e., the analogs of SEQ ID NO: 14, that are encompassed by the invention. To provide evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof. In this case, the only factor present in the claims is a structure in the form of a sequence identifier. The specification does not supply compensatory teachings. Specifically, p.18, line 26 – p.19, line 27 teaches that analogs of polypeptides of SEQ ID NO: 1-100 include at least a portion of the polypeptides, wherein the portion contains deletions or additions of one or more contiguous or noncontiguous amino acids, or containing one or more amino acid substitutions. There is no identification of any particular portion of the claimed structures that must be conserved, since SEQ ID NO: 14 may be altered. Accordingly, in the absence of sufficient recitation of distinguishing identifying characteristics, the

specification does not provide adequate written description of the claimed genus.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed*." (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See *Vas-Cath* at page 1116).

With the exception of the full-length, unaltered amino acid sequence of SEQ ID NO: 14, the skilled artisan cannot envision the detailed chemical structure of the encompassed peptides, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required. See *Fiers v. Revel*, 25 USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016.

One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481 at 1483. In *Fiddes*, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

Therefore, only isolated polypeptides comprising the full-length, unaltered amino acid sequences set forth in SEQ ID NO: 14, but not the full breadth of the

claims meets the written description provision of 35 U.S.C. §112, first paragraph. Applicants are reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

Claims 1-10 and 27-31 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for peptides of SEQ ID NO: 14 and methods thereof, does not reasonably provide enablement for peptides and analogs of SEQ ID NO: 14 and methods thereof. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

The factors to be considered in determining whether a disclosure would require undue experimentation include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art and, (8) the breadth of the claims. *In re Wands*, 8 USPQ2d, 1400 (CAFC 1988).

The instant claims require the use of a broad genus of peptides and as stated above, Applicants have not described all of the common features of the genus such that the skilled artisan could identify individual members. The potential amino acid sequences encompassed by the claim have particular

structures, the predictability of which is complex and outside the realm of routine experimentation. Since detailed information regarding the structural requirements of the multitude of potential amino acid sequences encompassed by the claims are lacking, and given the lack of working examples reciting any and all of the sequences encompassed by the claims, it is unpredictable as to which variations, if any, meet the limitations of the claims. Thus, making said peptides or polypeptides and testing them for the claimed biological activity would constitute undue experimentation.

Accordingly, it is well known in the art that even two polypeptides differing in structure by only one amino acid residue can have completely different functions. For example, Yan et al. (Science 290: 523-527, 2000) teaches that in certain cases, a change of two-amino acid residues in a protein results in switching the binding of the protein from one receptor to another. Also, and more importantly, relevant art regarding biliary glycoprotein (BGP; i.e., an amino acid molecule comprising SEQ ID NO: 14) and BGP splice variants often have divergent functions. Specifically, Barnett et al (Mol. Cell. Biol. 13: 1273-1282, 1993) teaches that BGP isoforms probably have divers in vivo functions and that fusions comprising the extracellular domain of BGPa and an Fc immunoglobulin fragment and a BGPb-Fc have different functions (p.1280, ¶ 2 and 3). Thus, as outlined above, the predictability of amino acid sequences that would function as claimed is complex and outside the realm of routine experimentation.

The test of enablement is not whether any experimentation is necessary, but whether, if experimentation is necessary, it is undue. Due to the large

quantity of experimentation necessary to practice the claimed invention, the absence of working examples directed to same, the complex nature of the invention, the state of the prior art which establishes the unpredictability of the claimed methods, and the breadth of the claims which encompass variant proteins, undue experimentation would be required of the skilled artisan to practice the claimed invention in its full scope.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10 and 27-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Watt et al (item AFFFF on IDS dated 10 December 2004).

The claims are drawn to an isolated peptide comprising an amino acid sequence represented by SEQ ID NO: 14, or analog thereof that modulates the function of at least one CD66 family member and/or at least one ligand thereof; and a method of modulating immune cell activation, proliferation, and/or differentiation, comprising contacting an immune cell with at least one peptide or peptide conjugate comprising an amino acid sequence represented by SEQ ID NO: 14.

The Watt et al. reference teaches a biliary glycoprotein (BGP) and splice variants (e.g., BGPc) that comprise an amino acid sequence that is 100% identical with the instant SEQ ID NO: 14 (see attached sequence alignment A), which binds specifically to CD66 monoclonal antibodies (abstract). Given that BGPc binds to the CD66 antibodies, (i.e. it modulates the function of at least one CD66 family member and/or at least one ligand thereof), the limitations of claims 1-3 are met by the Watt et al. reference. The Watt et al. reference also teaches that BGP and BGPc localize at the cell surface at areas of cell-cell contact and that they mediate homotypic adhesion (p.205, ¶1 and 2), thus meeting the limitations of claim 4. It is noted that although the Watt et al. reference does not appreciate the remaining functions of the peptide of claim 4, these would nonetheless be inherent properties of said peptide. Applicants are reminded that chemical compounds and their properties are inseparable (In re Papesch, 315 F.2d 381, 137 USPQ 43 (CCPA1963)), as are their processes and yields (In re Von Schickh, 362 F.2d 821, 150 USPQ 300 (CCPA 1966)). Thus, absent evidence to the contrary, the Watt et al. reference inherently teaches the all of the modulating properties of the peptide of claim 4.

Additionally, the Watt et al. reference teaches BGPc-cellular fusions, (e.g., CHO-BGPc; p.205, ¶1), thus meeting the limitations of claims 5-7. Further, the reference teaches the peptide attached to a fluorescent tag (p.202, ¶1), thus meeting the limitations of claims 8-10. The reference teaches contacting immune cells and epithelial cells (i.e. T-cells, B-cells, myeloid, erythroid and colonic epithelial cells) with BGPc and teaches that BGPc mediates homotypic adhesion

(p.205, ¶1 and 2), thus meeting the limitations of claims 4 and 27-30. It is noted that the claimed "method of modulating immune cell activation, proliferation, and/or differentiation" (as recited by claim 27) is the purpose of the invention, which is recited by the preamble and thus imparts no patentable weight on the claim (see MPEP 2111.02, section II). Regardless, the reference teaches modulating immune cell activation, since it teaches adhesion of BGPc expressing cells with macrophage cells (p.205, figure 6), for example. Finally, the reference teaches *in vivo* studies (p.208, final paragraph), thus meeting the limitations of claim 31.

Since the reference teaches all the elements of the claims, claims 1-10 and 27-31 are anticipated by Watt et al.

Claims 1-7 and 27, 28 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Barnett et al (Mol. Cell. Biol. 13: 1273-1282, 1993) and as evidenced by Watt et al (item AFFFF on IDS dated 10 December 2004).

The claims are drawn to an isolated peptide comprising an amino acid sequence represented by SEQ ID NO: 14, or analog thereof that modulates the function of at least one CD66 family member and/or at least one ligand thereof.

The Barnett et al. reference teaches a biliary glycoprotein (BGP) that comprises an extracellular domain (II a), which comprises an amino acid sequence which is 100% identical with the instant SEQ ID NO: 14 (see attached sequence alignment B and Figure 5B, p.1279). The Barnett et al document also teaches that the BGPs are members of the CD66 family (p1273, ¶1). Although

the Barnett et al. reference does not appreciate the claimed function of modulating the function of at least one CD66 family member and/or at least one ligand thereof, this is nonetheless an inherent property of the BGP as evidenced by the Watt et al. reference. The Watt et al. reference teaches that BGP binds CD66 monoclonal antibodies (p.204, ¶1), (i.e. it modulates the function of at least one CD66 family member and/or at least one ligand thereof); thus, the limitations of claims 1-3 are met by the Barnett et al. reference.

Furthermore, the Barnett et al. reference teaches contacting immune cells and epithelial cells (e.g. acute myelogenous leukemia cells and human colonic mucosal cells) with various BGP isoantigens (p.1274, ¶1 and p.1278, ¶3) and teaches that BGPs (BGPa and BGPb) mediate homotypic adhesion (p.1280, ¶1), thus meeting the limitations of claims 4, 27, 28 and 30. It is noted that although the Barnett et al. reference does not appreciate the remaining functions of the peptide of claim 4, these would nonetheless be inherent properties of said peptide. Applicants are reminded that chemical compounds and their properties are inseparable (In re Papesch, 315 F.2d 381, 137 USPQ 43 (CCPA1963)), as are their processes and yields (In re Von Schickh, 362 F.2d 821, 150 USPQ 300 (CCPA 1966)). Thus, absent evidence to the contrary, the Barnett et al. reference inherently teaches all of the modulating properties of the peptide of claim 4. It is also noted that the claimed "method of modulating immune cell activation, proliferation, and/or differentiation" (as recited by claim 27) is the purpose of the invention, which is recited by the preamble and thus imparts no patentable weight on the claim (see MPEP 2111.02, section II).

Additionally, the Barnett et al. reference teaches fusion proteins, comprising the extracellular domain of either BGPa or BGPb conjugated to a human Fc fragment (p.1280, ¶3), and teaches expression of the BGP isoantigens in various cells, i.e., the peptide complexed with cells (p.1274, ¶1), thus meeting the limitations of claims 5-7.

Since the reference teaches all the elements of the claims, claims 1-7 and 27, 28 and 30 are anticipated by Barnett et al.

Conclusion

No claims are allowed.

Advisory Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory S. Emch whose telephone number is (571) 272-8149. The examiner can normally be reached on Monday through Friday from 9AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet L. Andres can be reached at (571) 272-0867. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregory S. Emch, Ph.D.
Patent Examiner
Art Unit 1649
17 February 2007

ELIZABETH KEMMERER
PRIMARY EXAMINER

Sequence alignment A
SEQ ID NO: 14

```
ID   Q16170_HUMAN   PRELIMINARY;   PRT;   464 AA.
AC   Q16170; Q15601;
DT   01-NOV-1996, integrated into UniProtKB/TrEMBL.
DT   01-NOV-1996, sequence version 1.
DT   27-JUN-2006, entry version 38.
DE   BGPc (BGPc_HUMAN).
GN   Name=BGPc; Synonyms=BGP1;
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Euarchontoglires; Primates; Haplorrhini;
OC   Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   NUCLEOTIDE SEQUENCE.
RX   MEDLINE=94289702; PubMed=8018919;
RA   Watt S.M., Fawcett J., Murdoch S.J., Teixeira A.M., Gschmeissner S.E.,
RA   Hajibagheri N.M., Simmons D.L.;
RT   "CD66 identifies the biliary glycoprotein (BGP) adhesion molecule:
RT   cloning, expression, and adhesion functions of the BGPc splice
RT   variant.";
RL   Blood 84:200-210(1994).
RN   [2]
RP   NUCLEOTIDE SEQUENCE.
RA   Lamerdin J.E., McCready P.M., Skowronski E., Adamson A.W.,
RA   Burkhart-Schultz K., Gordon L., Kyle A., Ramirez M., Stilwagen S.,
RA   Phan H., Velasco N., Do L., Regala W., Terry A., Garnes J.,
RA   Danganan L., Poundstone P., Christensen M., Georgescu A., Avila J.,
RA   Liu S., Attix C., Andreise T., Trankheim M., Amico-Keller G.,
RA   Coefield J., Duarte S., Lucas S., Bruce R., Thomas P., Quan G.,
RA   Kronmiller B., Arellano A., Montgomery M., Ow D., Nolan M., Trong S.,
RA   Kobayashi A., Olsen A.S., Carrano A.V.;
RL   Submitted (JUN-1998) to the EMBL/GenBank/DDBJ databases.
CC   ---------------------------------------------------------------------
CC   Copyrighted by the UniProt Consortium, see http://www.uniprot.org/terms
CC   Distributed under the Creative Commons Attribution-NoDerivs License
CC   ---------------------------------------------------------------------
DR   EMBL; S71326; AAB31183.1; -; mRNA.
DR   EMBL; AC004785; AAC18436.1; -; Genomic_DNA.
DR   PIR; C30127; C30127.
DR   UniGene; Hs.512682; -.
DR   HSSP; Q61353; 1L6Z.
DR   Ensembl; ENSG00000079385; Homo sapiens.
DR   RZPD-ProtExp; G0460; -.
DR   RZPD-ProtExp; IOH14244; -.
DR   GO; GO:0016020; C:membrane; IEA.
DR   InterPro; IPR000276; GPCR_Rhodpsn.
DR   InterPro; IPR013151; Ig.
DR   InterPro; IPR007110; Ig-like.
DR   InterPro; IPR003599; Ig_sub.
DR   InterPro; IPR003598; Ig_sub2.
DR   InterPro; IPR013106; Ig_V-set.
DR   Pfam; PF00047; ig; 3.
DR   Pfam; PF07686; V-set; 1.
DR   SMART; SM00409; IG; 4.
DR   SMART; SM00408; IGc2; 2.
DR   PROSITE; PS00237; G_PROTEIN_RECEP_F1_1; UNKNOWN_1.
DR   PROSITE; PS50835; IG_LIKE; 3.
KW   Immunoglobulin domain; Membrane; Repeat; Transmembrane.
SQ   SEQUENCE   464 AA;  50521 MW;  598E4D71BF05EDA9 CRC64;

  Query Match            100.0%;  Score 79;  DB 2;  Length 464;
  Best Local Similarity  100.0%;  Pred. No. 4.6e-05;
  Matches   14;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 TNDTGISIRWFFKN 14
              ||||||||||||||
Db        350 TNDTGISIRWFFKN 363
```

10/069,605
Sequence alignment B
SEQ ID NO: 14

RESULT 1
Q13857_HUMAN
ID   Q13857_HUMAN   PRELIMINARY;   PRT;   226 AA.
AC   Q13857;
DT   01-NOV-1996, integrated into UniProtKB/TrEMBL.
DT   01-NOV-1996, sequence version 1.
DT   13-JUN-2006, entry version 28.
DE   Biliary glycoprotein (Fragment).
GN   Name=BGP;
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Euarchontoglires; Primates; Haplorrhini;
OC   Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   NUCLEOTIDE SEQUENCE.
RX   MEDLINE=89139550; PubMed=2537311; DOI=10.1083/jcb.108.2.267;
RA   Barnett T.R., Kretschmer A., Austen D.A., Goebel S.J., Hart J.T.,
RA   Elting J.J., Kamarck M.E.;
RT   "Carcinoembryonic antigens: alternative splicing accounts for the
RT   multiple mRNAs that code for novel members of the carcinoembryonic
RT   antigen family.";
RL   J. Cell Biol. 108:267-276(1989).
RN   [2]
RP   NUCLEOTIDE SEQUENCE.
RX   MEDLINE=93140765; PubMed=8423792;
RA   Barnett T.R., Drake L., Pickle W. II;
RT   "Human biliary glycoprotein gene: characterization of a family of
RT   novel alternatively spliced RNAs and their expressed proteins.";
RL   Mol. Cell. Biol. 13:1273-1282(1993).
CC   ---
CC   Copyrighted by the UniProt Consortium, see http://www.uniprot.org/terms
CC   Distributed under the Creative Commons Attribution-NoDerivs License
CC   ---
DR   EMBL; M76741; AAA57141.1; -; Genomic_DNA.
DR   HSSP; Q61353; 1L6Z.
DR   RZPD-ProtExp; G0460; -.
DR   RZPD-ProtExp; IOH14244; -.
DR   GO; GO:0005624; C:membrane fraction; TAS.
DR   GO; GO:0007565; P:pregnancy; TAS.
DR   InterPro; IPR013151; Ig.
DR   InterPro; IPR007110; Ig-like.
DR   InterPro; IPR003599; Ig_sub.
DR   InterPro; IPR003598; Ig_sub2.
DR   Pfam; PF00047; ig; 1.
DR   SMART; SM00409; IG; 1.
DR   SMART; SM00408; IGc2; 1.
DR   PROSITE; PS50835; IG_LIKE; 1.
KW   Immunoglobulin domain.
FT   NON_TER   226   226
SQ   SEQUENCE   226 AA; 24045 MW; 8E11929059866970 CRC64;

  Query Match   100.0%; Score 79; DB 2; Length 226;
  Best Local Similarity   100.0%; Pred. No. 2.2e-05;
  Matches   14; Conservative   0; Mismatches   0; Indels   0; Gaps   0;

Qy   1 TNDTGISIRWFFKN 14
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Db   58 TNDTGISIRWFFKN 71

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ID   Q16170_HUMAN   PRELIMINARY;   PRT;   464 AA.
AC   Q16170; Q15601;
DT   01-NOV-1996, integrated into UniProtKB/TrEMBL.
DT   01-NOV-1996, sequence version 1.
DT   27-JUN-2006, entry version 38.
DE   BGPc (BGPc_HUMAN).
GN   Name=BGPc; Synonyms=BGP1;
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Euarchontoglires; Primates; Haplorrhini;
OC   Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   NUCLEOTIDE SEQUENCE.
RX   MEDLINE=94289702; PubMed=8018919;
RA   Watt S.M., Fawcett J., Murdoch S.J., Teixeira A.M., Gschmeissner S.E.,
RA   Hajibagheri N.M., Simmons D.L.;
RT   "CD66 identifies the biliary glycoprotein (BGP) adhesion molecule:
RT   cloning, expression, and adhesion functions of the BGPc splice
RT   variant.";
RL   Blood 84:200-210(1994).
RN   [2]
RP   NUCLEOTIDE SEQUENCE.
RA   Lamerdin J.E., McCready P.M., Skowronski E., Adamson A.W.,
RA   Burkhart-Schultz K., Gordon L., Kyle A., Ramirez M., Stilwagen S.,
RA   Phan H., Velasco N., Do L., Regala W., Terry A., Garnes J.,
RA   Danganan L., Poundstone P., Christensen M., Georgescu A., Avila J.,
RA   Liu S., Attix C., Andreise T., Trankheim M., Amico-Keller G.,
RA   Coefield J., Duarte S., Lucas S., Bruce R., Thomas P., Quan G.,
RA   Kronmiller B., Arellano A., Montgomery M., Ow D., Nolan M., Trong S.,
RA   Kobayashi A., Olsen A.S., Carrano A.V.;
RL   Submitted (JUN-1998) to the EMBL/GenBank/DDBJ databases.
CC   ---------------------------------------------------------------------
CC   Copyrighted by the UniProt Consortium, see http://www.uniprot.org/terms
CC   Distributed under the Creative Commons Attribution-NoDerivs License
CC   ---------------------------------------------------------------------
DR   EMBL; S71326; AAB31183.1; -; mRNA.
DR   EMBL; AC004785; AAC18436.1; -; Genomic_DNA.
DR   PIR; C30127; C30127.
DR   UniGene; Hs.512682; -.
DR   HSSP; Q61353; 1L6Z.
DR   Ensembl; ENSG00000079385; Homo sapiens.
DR   RZPD-ProtExp; G0460; -.
DR   RZPD-ProtExp; IOH14244; -.
DR   GO; GO:0016020; C:membrane; IEA.
DR   InterPro; IPR000276; GPCR_Rhodpsn.
DR   InterPro; IPR013151; Ig.
DR   InterPro; IPR007110; Ig-like.
DR   InterPro; IPR003599; Ig_sub.
DR   InterPro; IPR003598; Ig_sub2.
DR   InterPro; IPR013106; Ig_V-set.
DR   Pfam; PF00047; ig; 3.
DR   Pfam; PF07686; V-set; 1.
DR   SMART; SM00409; IG; 4.
DR   SMART; SM00408; IGc2; 2.
DR   PROSITE; PS00237; G_PROTEIN_RECEP_F1_1; UNKNOWN_1.
DR   PROSITE; PS50835; IG_LIKE; 3.
KW   Immunoglobulin domain; Membrane; Repeat; Transmembrane.
SQ   SEQUENCE   464 AA;  50521 MW;  598E4D71BF05EDA9 CRC64;

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  Best Local Similarity   100.0%;  Pred. No. 4.6e-05;
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Qy          1 TNDTGISIRWFFKN 14
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Db        350 TNDTGISIRWFFKN 363
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Q13857_HUMAN
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DT   01-NOV-1996, sequence version 1.
DT   13-JUN-2006, entry version 28.
DE   Biliary glycoprotein (Fragment).
GN   Name=BGP;
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Euarchontoglires; Primates; Haplorrhini;
OC   Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   NUCLEOTIDE SEQUENCE.
RX   MEDLINE=89139550; PubMed=2537311; DOI=10.1083/jcb.108.2.267;
RA   Barnett T.R., Kretschmer A., Austen D.A., Goebel S.J., Hart J.T.,
RA   Elting J.J., Kamarck M.E.;
RT   "Carcinoembryonic antigens: alternative splicing accounts for the
RT   multiple mRNAs that code for novel members of the carcinoembryonic
RT   antigen family.";
RL   J. Cell Biol. 108:267-276(1989).
RN   [2]
RP   NUCLEOTIDE SEQUENCE.
RX   MEDLINE=93140765; PubMed=8423792;
RA   Barnett T.R., Drake D., Pickle W. II;
RT   "Human biliary glycoprotein gene: characterization of a family of
RT   novel alternatively spliced RNAs and their expressed proteins.";
RL   Mol. Cell. Biol. 13:1273-1282(1993).
CC   ---------------------------------------------------------------------
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CC   ---------------------------------------------------------------------
DR   EMBL; M76741; AAA57141.1; -; Genomic_DNA.
DR   HSSP; Q61353; 1L6Z.
DR   RZPD-ProtExp; G0460; -.
DR   RZPD-ProtExp; IOH14244; -.
DR   GO; GO:0005624; C:membrane fraction; TAS.
DR   GO; GO:0007565; P:pregnancy; TAS.
DR   InterPro; IPR013151; Ig.
DR   InterPro; IPR007110; Ig-like.
DR   InterPro; IPR003599; Ig_sub.
DR   InterPro; IPR003598; Ig_sub2.
DR   Pfam; PF00047; ig; 1.
DR   SMART; SM00409; IG; 1.
DR   SMART; SM00408; IGc2; 1.
DR   PROSITE; PS50835; IG_LIKE; 1.
KW   Immunoglobulin domain.
FT   NON_TER     226     226
SQ   SEQUENCE   226 AA;  24045 MW;  8E11929059866970 CRC64;

  Query Match             100.0%;  Score 79;  DB 2;  Length 226;
  Best Local Similarity   100.0%;  Pred. No. 2.2e-05;
  Matches   14;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 TNDTGISIRWFFKN 14
              ||||||||||||||
Db         58 TNDTGISIRWFFKN 71
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